Flex_DSL_ ®

Telecommunications AG

FlexDSL Orion 2

TDM Based SHDSL.bis

Features

- SHDSL and SHDSL.bis (TC-PAM16/32)
- Up to 5.7Mbps over single and up to 22.8Mbps over quadruple pair copper
- E1 (G.703/704, balanced/unbalanced)
- Ethernet Bridge (10/100BaseT)
- Multi-Service Operation
- Point-to-Point and Point-to-Multipoint
- Console Port, Telnet, Web, SNMP Management
- 48VDC Powered
- Remote Power Support
- Repeater/Regenerator Support

The FlexDSL Orion 2 SHDSL.bis product family offers a broad range of products, which are based on the latest SHDSL.bis standard, while also being fully interoperable with existing SHDSL equipment. The FlexDSL Orion 2 supports TC-PAM8, TC-PAM16, and the new TC-PAM32 line coding. The support of these line codes ensures compatibility with existing SHDSL equipment, that is already installed, in order to protect customer investments, while at the same time providing an upgrade path to the newest DSL technologies.
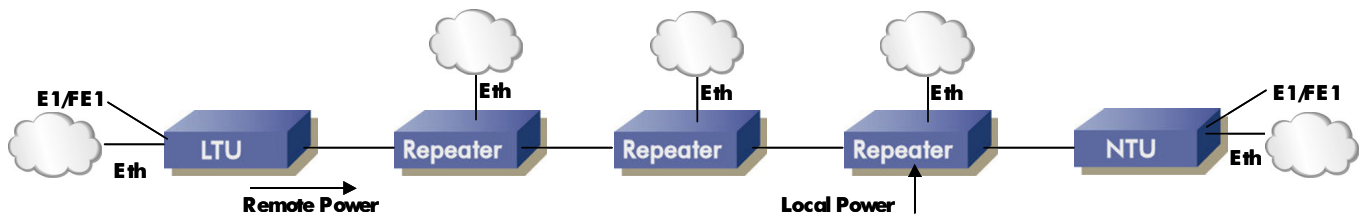
SHDSL.bis allows symmetrical data and voice transmission at speeds up to 5.7Mbps over a single pair of copper. In addition, the FlexDSL Orion 2 SHDSL.bis modem range also supports DSL channel bonding for up to 4 copper pairs in order to achieve speeds to 22.8Mbps! FlexDSL Orion 2 SHDSL.bis modems can provide up to 4 complete E1 interfaces, which support framed and unframed services (G.703/G.704). An optional integrated 4 port Ethernet switch (10/100BaseT) ensures connectivity with bridge functionality. This makes FlexDSL Orion 2 SHDSL.bis modems a perfect solution for a wide range of applications in which TDM and IP services need to be transmitted over copper wires.

Like all FlexDSL Orion products the FlexDSL Orion 2 SHDSL.bis modems are based on industrial components and manufactured according to highest quality standards providing additional value due to the extended temperature ranges and higher reliability. The combination of comprehensive functions providing maximum flexibility together with the higher quality of the FlexDSL Orion 2 SHDSL.bis product family make it the perfect choice for all your DSL needs.
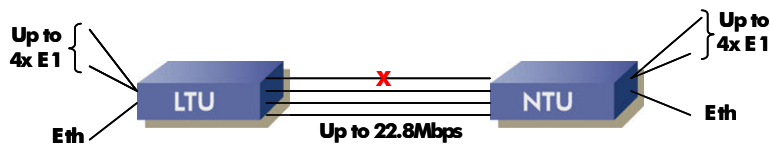
FlexDSL Orion 2 SHDSL.bis Applications

E1/FE1

Eth

LTU

Eth

Repeater

Eth

Repeater

Eth

Repeater

NTU

E1/FE1

Eth

Remote Power

Local Power

Ethernet Add/Drop Repeater Application with Remote Power

Up to
4x E1

LTU

Eth

X

Up to 22.8Mbps

NTU

Up to
4x E1

Eth

Point-to-Point Bonding Application with Failure Protection

E1/FE1

Eth

LTU

4x 5.7Mbps

NTU

E1/FE1

Eth

NTU

E1/FE1

Eth

NTU

E1/FE1

Eth

NTU

E1/FE1

Eth
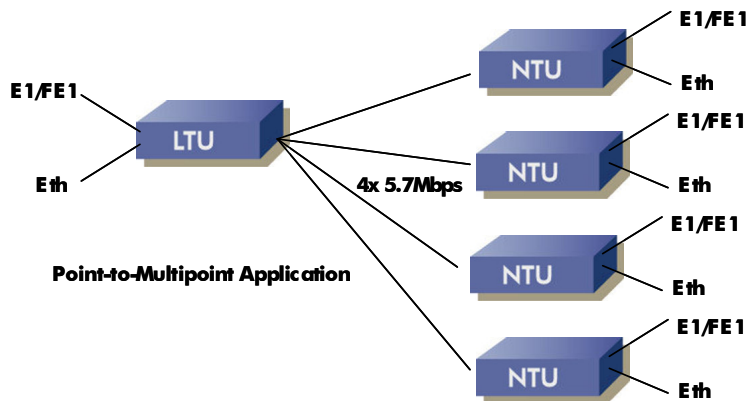
Point-to-Multipoint Application

Specifications are subject to change without notice

FlexDSL Orion 2 SHDSL.bis Standalone Modem

Model: FG-PAM-SAN-E1B/Eth, V50

DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	64kbps - 5.7Mbps
Copper Pairs:	1
Modes:	Master / Slave
Interface:	1x E1 (120 Ohm), 1x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, accepts local and remote power
Physical Interfaces:	RJ48 (E1), RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (option FG-PAM-PA48x)
Special Version:	FG-PAM-SAN-E1U/Eth, V50 offers E1 75Ohm BNC

Model: FG-PAM-SA2N-2E1B/Eth, V51

DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	64kbps - 11.4Mbps
Copper Pairs:	2
Modes:	Master / Slave
Interface:	2x E1 (120 Ohm), 1x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, accepts local and remote power
Physical Interfaces:	RJ48 (E1), RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (option FG-PAM-PA48x)
Remarks:	2x 5.7Mbps or 1x 11.4Mbps

Model: FG-PAM-SAN-Eth, V52

DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	64kbps - 5.7Mbps
Copper Pairs:	1
Modes:	Master / Slave
Interface:	1x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, accepts local and remote power
Physical Interfaces:	RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (option FG-PAM-PA48x)

Model: FG-PAM-SA2N-Eth, V53

DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	64kbps - 11.4Mbps
Copper Pairs:	2
Modes:	Master / Slave
Interface:	1x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, accepts local and remote power
Physical Interfaces:	RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (option FG-PAM-PA48x)
Remarks:	2x 5.7Mbps or 1x 11.4Mbps

Model: FG-PAM-SA4N-Eth, V54

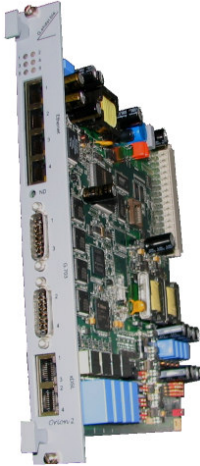|	
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	64kbps - 22.8Mbps
Copper Pairs:	4
Modes:	Master / Slave
Interface:	1x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, accepts local and remote power
Physical Interfaces:	RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (option FG-PAM-PA48x)
Remarks:	4x 5.7Mbps, 2x 11.4Mbps, or 1x 22.8Mbps

Specifications are subject to change without notice

FlexDSL Orion 2 SHDSL.bis Sub Rack Module

Model:	**FG-PAM-SRL-E1B/4Eth-RP, V60**
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	64kbps - 5.7Mbps
Copper Pairs:	1
Modes:	Master / Slave
Interface:	1x E1 (120 Ohm), 4x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, remote power source, local power
Physical Interfaces:	RJ48 (E1), RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (FG-ACU-SR, optional FG-TCU-SR)
Special Version:	FG-PAM-SRL-E1U/4Eth-RP, V60 offers E1 75Ohm BNC

Model:	**FG-PAM-SRL-4Eth-RP, V61**
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	64kbps - 5.7Mbps
Copper Pairs:	1
Modes:	Master / Slave
Interface:	4x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, remote power source, local power
Physical Interfaces:	RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (FG-ACU-SR, optional FG-TCU-SR)

Model:	**FG-PAM-SRL-2E1B/4Eth-RP, V62**
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	64kbps - 5.7Mbps
Copper Pairs:	1
Modes:	Master / Slave
Interface:	2x E1 (120 Ohm), 4x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, remote power source, local power
Physical Interfaces:	RJ48 (E1), RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (FG-ACU-SR, optional FG-TCU-SR)
Special Version:	FG-PAM-SRL-2E1U/4Eth-RP, V62 offers E1 75Ohm BNC

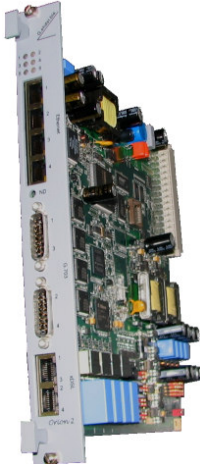| **Model:**	**FG-PAM-SR2L-2E1B/4Eth-RP, V63**
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	64kbps - 11.4Mbps
Copper Pairs:	2
Modes:	Master / Slave
Interface:	2x E1 (120 Ohm), 4x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, remote power source, local power
Physical Interfaces:	RJ48 (E1), RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (FG-ACU-SR, optional FG-TCU-SR)
Special Version:	FG-PAM-SR2L-2E1U/4Eth-RP, V63 offers E1 75Ohm BNC

Specifications are subject to change without notice

FlexDSL Orion 2 SHDSL Sub Rack Module (continued)

	Model: FG-PAM-SR2L-4Eth-RP, V64
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	64kbps - 11.4Mbps
Copper Pairs:	2
Modes:	Master / Slave
Interface:	4x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, remote power source, local power
Physical Interfaces:	RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (FG-ACU-SR, optional FG-TCU-SR)
Remarks:	2x 5.7Mbps or 1x 11.4Mbps

	Model: FG-PAM-SR2L-4E1B/4Eth-RP, V65
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	64kbps - 11.4Mbps
Copper Pairs:	2
Modes:	Master / Slave
Interface:	4x E1 (120 Ohm), 4x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, remote power source, local power
Physical Interfaces:	RJ48 (E1), RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (FG-ACU-SR, optional FG-TCU-SR)

	Model: FG-PAM-SR4L-4E1B/4Eth-RP, V66
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	64kbps - 22.8Mbps
Copper Pairs:	4
Modes:	Master / Slave
Interface:	4x E1 (120 Ohm), 4x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, remote power source, local power
Physical Interfaces:	RJ48 (E1), RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (FG-ACU-SR, optional FG-TCU-SR)
Remarks:	4x 5.7Mbps, 2x 11.4Mbps, or 1x 22.8Mbps

	Model: FG-PAM-SR4L-4Eth, V68
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	64kbps - 22.8Mbps
Copper Pairs:	4
Modes:	Master / Slave
Interface:	4x Ethernet Bridge (10/100BaseT)
Power:	-48VDC, remote power source, local power
Physical Interfaces:	RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (FG-ACU-SR, optional FG-TCU-SR)
Remarks:	4x 5.7Mbps, 2x 11.4Mbps, or 1x 22.8Mbps

Specifications are subject to change without notice

FlexDSL Orion 2 SHDSL DIN Rail Modem

Model:	**FG-PAM-RAIL2N-2E1B/Eth, V51**
DSL Version:	SHDSL / SHDSL.bis
Modulation:	TC-PAM16 / TC-PAM32
Data Rate:	64kbps - 11.4Mbps
Copper Pairs:	2
Modes:	Master / Slave
Interface:	2x E1 (120 Ohm), 1x Ethernet Bridge (10/100BaseT)
Power:	18 - 36VDC or -48VDC, accepts local and remote power
Physical Interfaces:	RJ48 (E1), RJ45 (Ethernet), RJ48 (SHDSL), Molex (Power), DB9 (Management)
Management:	Console Port, Telnet , HTTP, and SNMP via TCU
Power Supply:	Not Included (option FG-PAM-PA48x)
Remarks:	2x 5.7Mbps or 1x 11.4Mbps

FlexDSL Orion 2 SHDSL Overview

Functionality / FlexDSL Orion 2 Model	Standalone	Rail Mounting	Subrack Module	Single Pair	Dual Pair Bonding	Triple Pair Bonding	Quadruple Pair Bonding	Point-to-Point	Point-to-Multipoint	E1 (120Ohm)	Nx64	Ethernet Bridge	Multi-Service	Cross Connect	Remote Power Receiver	Remote Power Source	Console Port Management	Telnet Management	Web Management	SNMP Management
FG-PAM-SAN-E1B/Eth, V50	■			■	■			■		■		■	■	■	■		■	■	■	■
FG-PAM-SA2N-2E1B/Eth, V51	■			■	■			■		■		■	■	■	■		■	■	■	■
FG-PAM-SAN-Eth, V52	■			■	■			■				■		■	■		■	■	■	■
FG-PAM-SA2N-Eth, V53	■			■	■			■				■		■	■		■	■	■	■
FG-PAM-SA4N-Eth, V54	■			■	■	■	■	■				■		■	■		■	■	■	■
FG-PAM-RAIL2N-2E1B/Eth, V51		■		■	■			■		■		■		■	■		■	■	■	■
FG-PAM-SRL-E1B/4Eth-RP, V60			■	■				■		■		■				■	■	■	■	■
FG-PAM-SRL-4Eth-RP, V61			■	■				■				■				■	■	■	■	■
FG-PAM-SRL-2E1B/4Eth-RP, V62			■	■	■			■		■		■				■	■	■	■	■
FG-PAM-SR2L-2E1B/4Eth-RP, V63			■	■	■			■		■		■				■	■	■	■	■
FG-PAM-SR2L-4Eth-RP, V64			■	■	■			■				■				■	■	■	■	■
FG-PAM-SR2L-4E1B/4Eth-RP, V65			■	■	■	■	■	■		■		■				■	■	■	■	■
FG-PAM-SR4L-4E1B/4Eth-RP, V66			■	■	■	■	■	■		■		■				■	■	■	■	■
FG-PAM-SR4L-4Eth, V68			■	■	■	■	■	■				■					■	■	■	■

Specifications are subject to change without notice